

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listing of claims in the application.

1. (Currently Amended) A method for bonding two semiconductor wafers having surfaces to be bonded by a semiconductor wafer bonding process, comprising:

providing a periphery or edge geometry including a ~~particularly short~~ front side facet ~~in the two semiconductor wafers~~ having a length, measured in a direction of the surface, of less than 75 μm in each of the two semiconductor wafers at the surfaces to be bonded ~~in order to obtain an edge region having as low a number of defects as possible and to obtain a usable wafer surface as large as possible after the thinning of one of the two wafers, in particular after the separation, splitting off or grinding;~~

bonding the two semiconductor wafers at the surfaces to be bonded;
thinning one of the two semiconductor wafers to produce a thinned layer bonded on the other one of the two wafers.
2. (Currently Amended) The method for bonding according to claim 1, wherein at least one of the surfaces to be bonded includes at least one prepared layer or structures, which are transferred by the bonding and a subsequent thinning, ~~in particular a grinding, splitting off or separating, from a first the other one of the semiconductor wafers to a remaining the one of the semiconductor wafers.~~
3. (Currently Amended) The method for bonding according to claim 2, wherein ~~a~~the remaining one of the semiconductor wafers is a donator wafer or a top wafer.
4. (Currently Amended) The method for bonding of claim 2, wherein the ~~first~~other one of the wafers is a device wafer or a handle wafer.
5. (Original) The method for bonding of claim 2, wherein both surfaces to be bonded each include a prepared layer or structures.

6. (Currently Amended) The method for bonding of claim 1, wherein ~~said specifically short front side facet has a length, measured in the direction of the surface, of less than approximately 75 μ m, in particular for a diameter of the wafers to be bonded in the range of 100 mm to 300 mm~~ the semiconductor wafers have a diameter between 100 mm to 500 mm.
7. (Currently Amended) The method for bonding of claim 1, wherein the two wafers to be bonded have a diameter in the range of 300 mm to 500 mm, and both wafers have substantially the same diameter prior to the bonding and the thinning of the ~~remaining~~ one of the wafers.
8. (Previously presented) The method for bonding of claim 1, wherein the bond surfaces are connected via a laminar bond interface.
9. (Previously presented) The method for bonding of claim 1, wherein the front sides of the semiconductor wafers are the oppositely arranged surfaces to be bonded to each other via a bond interface.
10. (Currently Amended) The method for bonding of claim 1, wherein the edge geometry surrounds a bond interface at the periphery geometry.
11. (Currently Amended) The method for bonding of claim 1, wherein ~~said edge region having as low a number of defects as possible is less than 7 mm for a diameter of the semiconductor wafers of 150 mm, and is particularly less than 9% of the wafer surfacea non-usa~~ edge region having as low a number of defects as possible is less than 7 mm for a diameter of the semiconductor wafers of 150 mm.
12. (Currently Amended) The method for bonding of claim 11, wherein said non-usa ~~edge region having as low a number of defects as possible is less than approximately 5%~~

of the wafer surface, ~~and in particular is less than 2.6% or approximately 2% of the wafer surface.~~

13. (Currently Amended) The method for bonding of claim 1, wherein said non-usable edge region ~~having as low a number of defects as possible~~ is less than approximately 1mm for a diameter of the semiconductor wafer of approximately 150 mm.

14. (Previously presented) The method for bonding of claim 1, wherein at the periphery or edge geometry at the end thickness of the thinned one of the wafers a substantially perpendicular section or portion is provided that is formed from the edge facet of the thinned wafer.

15. (Previously presented) The method for bonding of claim 14, wherein said substantially perpendicular section is oriented perpendicularly to a laminar bond interface or to the wafer surface.

16. (Previously presented) The method for bonding of claim 1, wherein said two semiconductor wafers have substantially the same dimensions in the direction of the bond or wafer surfaces, and in particular said two semiconductor wafers have substantially the same diameter corresponding to a rated dimension.

17. (Previously presented) The method for bonding of claim 1, wherein said two semiconductor wafers have the same diameter.

18. (Previously presented) The method for bonding of claim 1, wherein said periphery or edge geometry comprises two differently inclined facets that are inclined in a range less than 90° and greater than 0° with respect to a bond interface.

19. (Previously presented) The method for bonding of claim 1, wherein a bond interface or the wafer surface defines a reference plane.

20. (Currently Amended) An assembly as a composite of two semiconductor wafers connected by a semiconductor bonding process, ~~in which~~wherein the bonded semiconductor wafers are provided at the bonded surfaces with an edge geometry having a ~~specific short~~ front side facet less than 75 μ m for a wafer diameter ranging from 100_mm to 300_mm so as to obtain an edge region ~~being as devoid of defects as possible and a usable wafer surface as large as possible~~ after thinning, ~~in particular after the as one of~~ separation or splitting off~~[,]~~ of one of the wafers.

21. (Currently amended) The assembly of claim 20, wherein one or both of the bonded surfaces include prepared layers or other structures, which are transferred by the bonding and the subsequent thinning/separating of the one wafer from the other wafer.

22. (Previously presented) The assembly of claim 20, wherein the thinning comprises a separating process.

23-28. (Cancelled)

29. (Currently amended) The assembly of claim 20, wherein first oblique faces formed from the ~~specially shorter~~ facets that are shorter than second oblique faces located radially further inwardly and originating from an edge roll-off process, the dimensions being measured along a direction of extension of the respective oblique face of the respective semiconductor wafer.

30. (New) The method of claim 1, wherein first oblique faces formed from the facets that are shorter than second oblique faces located radially further inwardly and originating from an edge roll-off process, the dimensions being measured along a direction of extension of the respective oblique face of the respective semiconductor wafer.

31. (New) The method of claim 1, wherein thinning is one of grinding, splitting off and separating.

32. (New) The method for bonding of claim 12, wherein the non-usable edge region is less than 2.6% or less than 2% of the wafer surface.

33. (New) The method for bonding of claim 1, wherein a non-usable edge region is provided having less than 9% of a wafer surface.